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ABSTRACT

New and continuing missions for the modern university are discussed. "Multiuniversities" are viewed as institutions with multiple purposes that have retained the basic university organization. The main response of multiuniversities to demands for cross-disciplinary activities has been the creation of relatively small centers and institutes each involved in some multidisciplinary research and/or outreach activity. It is proposed that a new structure for the university is needed to meet new missions. The following demands of universities are considered: technology and knowledge diffusion and professional preparation/continuing education. Adaptations are also suggested for all professions, including more relation of theory to practice, and more breadth in the curriculum. The problems inherent in the current tradition of disciplinary rather than multidisciplinary faculty activity are identified. It is recommended that a two-dimensional structure within the institution be instituted rather than the current one-dimensional structure. This change would involve a dual flow of resources: (1) allocations made to deans and then to disciplinary departments, and (2) resources available to fund cross-disciplinary activities and outreach. Different personnel channels are also recommended. (SW)

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Session 16
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THE POST-INDUSTRIAL UNIVERSITY:NEW STRUCTURES FOR NEW MISSIONS *

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Higher education is facing a peculiar paradox. Contemporary society has an unprecedented need for knowledge and information, and increasingly requires a highly skilled work force. One would therefore expect colleges and universities to be more highly valued and better supported than ever before as the principal societal mechanisms for advanced education and the transmission of knowledge. Instead, there exists widespread dissatisfaction with these institutions on the outside, and substantial malaise within them. Alternative educational and informational organizations are proliferating, to an extent that some observers are already predicting the early demise of the traditional educational institution.

Such obituaries are premature and an apocalyptic view is as yet not justified. But there is much reason for serious concern on the part of everyone interested in a strong and vibrant system of higher education. Universities in particular are the target of much criticism because they do not seem to be responding adaquately to many of the new demands of society which are consistent with the purposes of a university.

There are many, complex reasons for this, some beyond the control of higher education, but some within its purview. The internal structure of universities is one of the latter. Organizational problems are not of recent origin: for decades many observers have described the shortcomings of the existing discipline-based structure. However, the growing societal expectations are exacerbating the divergence between form and function at the same time that shrinking resources limit the ability of the university to respond in traditional ways. This brings new urgency to the need to reexamine the structure of the university, not as a panacea for all ills, but as an important condition for improvement.

THE STRUCTURE OF THE MULTIVERSITY:

In "The Uses of the University", Clark Kerr (1963) drew national attention to the multiple missions of the modern university. Merging the diverse historical strands represented by the German research university and the Oxbridge college as well as the land grant institution and the "Wisconsin Idea" of public service, the "multiversity" emerged in response to the new demands of the post-war era. Kerr described this new entity as representing a "...vast transformation (which) has taken place without a revolution... The multiversity has demonstrated how adaptive it can be to new opportunities for creativity..."

HE 017 471

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Yet, even then, Kerr was also emphasizing, with some regret, the essential conservatism of the American university. He described the basic conflict between internal and external dynamics, between the demands of society and the faculty's reluctance to change. And twenty years later, the Postscript to the third edition of Kerr's book has a central theme: "...the American research university remains much the same...(it is) among the least changed of institutions." (Kerr, 1982).

Kerr himself resolves the paradox that a "major transformation" can have taken place while the institution "remains much the same". He describes the multiversity as "a university city with its satellite suburbs." It did not develop as a coherent and homogeneous institution. Rather, it has become a complex and fragmented enterprise which responded to most of the new external demands and opportunities by creating all kinds of peripheral units. The modern university can no longer be considered as an "organism":

> "In an organism, the parts and the whole are inextricably bound together. Not so the multiversity - many parts can be added and subtracted with little effect on the whole or even little notice taken or any blood spilled. It is more a mechanism - a series of processes producing a series of results - a mechanism held together by administrative rules and powered by money." (Kerr, 1963,p.20).

This mechanism is not made up of roughly equal components. It is the "City of the Intellect" together with a number of "suburban satellites", and indeed the core of the university has been hardly affected. Nor has the basic organization of the university changed. In essence, by adding new components rather than by adapting existing units, the multiversities were able to contain the potential conflict between divergent objectives and to sidestep the need to examine the appropriateness of the basic university organization in the light of changed and expanded missions. Multiversities became institutions with multiple purposes which managed to retain the predominantly single purpose organizational structure of the pre-war research university: the array of ever proliferating, discipline-based departments, loosely grouped into colleges or faculties. And this happened not only in those relatively few institutions which already existed prior to the war as research universities, but also in the many expanded or newly created campuses which used the others as a model. It has been pointed out by many observers, from Parsons and Platt (1973) who state it with approval, to Jencks and Riesman (1968) who discuss the negative consequences, that throughout the system of universities, ranging from the most prestigious institutions to new and struggling branch campuses, the research-oriented disciplinary structure has continued to dominate the entire fabric of the multiversity.

The negative impact of this on undergraduate education has been much discussed, particularly during and after the period of student unrest. More recently, professional education has come under a growing amount of criticism (cf.,e.g., Lynton, 1984). Many of the perceived shortcomings of professional schools can be attributed to the extent to which the disciplinary structure has affected them. They have tended to become collections of discipline-oriented departments rather than being a coherent, profession-oriented unit. The methodology of the component disciplines has come to overshadow the practice of the profession. There is a great need to provide more of a cross-disciplinary synthesis.

To date, the principal response of multiversities to internal as well as external demands for activities which cut across disciplinary boundaries has been the creation of a number of relatively small centers and institutes each involved in some multidisciplinary research and/or outreach activity. In addition, many universities have multidisciplinary committees in charge of area programs and other curricula which involve several departments. These satellite units function quite well as long as the activity in question is limited in scope and marginal in terms of its use of resources and faculty time.

But they cannot involve more than a small portion of the faculty as long as the discipline-based structure is the only one to permeate the university.

In the first place, the multidisciplinary units usually are not part of the basic system of resource allocation. They either obtain funds from an external source such as a federal research grant, charge fees for services or manage to squeeze an extra position or two out of an administrator's discretionary fund. In addition there is a second, even more serious limitation. By and large, the participation of junior faculty members in these cross-disciplinary activities constitutes for them a substantial risk with regard to their chances for promotion and tenure. Teaching in multidisciplinary programs, participation in non-departmental centers and institutes, and outreach and public service activities of every kind are given little or no weight in the faculty reward system because they are not valued very highly by the bulk of the faculty. The one-dimensional departmental structure of the university reinforces and perpetuates the narrow focus of the faculty reward system. The non-departmental activities are not part of the regular flow of resources nor of the path along which recommendations for personnel actions move.

A similar situation exists with regard to the outreach and extension programs of the multiversity. Most of these are viewed as "adjunct to their basic purpose" even in public universities (Stern, 1980) and lie outside the basic resource and reward systems of the institutions. Both components of the university structure must be changed if the importance of such activities is to be enhanced (cf., e.g., Crosson, 1983; Florestano and Hambrick, 1984).

The implications of a predominantly disciplinary structure has been discussed by many observers of higher education during the past twenty years. (cf., e.g., Jencks and Riesman, 1968; Schein, 1972; Smelser, 1972; Bess, 1982; Clark, 1983). They are mentioned again in this paper not to rake up the past but because the need to reexamine the structure of the university is greater than it has ever been before. The circumstances which universities face at present - and even more the challenges of the coming years - differ in important ways from those which existed during the sixties and seventies. External demands and expectations have become even greater, while at the same time dissatisfaction and scepticism about higher education is more pronounced. The universities are facing growing competition from new sources in the entire range of their activities, from basic research and professional degree programs to continuing education and technical assistance. Furthermore, the resources available to higher education have become more limited. As a result, it is no longer realistic to meet societal needs merely by the continuing addition of peripheral units. The money isn't there to continue to extend the "urban sprawl" of the multiversity. **There is an urgent need to modify the central core of the university, and to redirect a portion of its resources to the new external challenges. We need a new structure to meet new missions.**

THE NEW MISSIONS:

During the past two or three years, a flood of books, magazine articles and speeches have emphasized the dependence of our economy on the effective absorption of new scientific and technological developments. There is no need to cite in this paper any one of the innumerable quotable quotes on this subject, nor to elaborate on the major implication of the new dogma: the importance of what has come to be tagged as "human capital." Many of the statements about the "microchip revolution" and about the potential impact of biotechnology are exaggerated. Similarly a good deal of the emphasis on the importance of an educated workforce tends to oversimplify the issues. There is a strong implication that the new societal needs can be met, on the one hand, simply by a renewed emphasis on research, and, on the other hand, by increasing

enrollment in our engineering and computer science programs. The real needs are far more complex than that, and place greater demands on the universities. These can no longer respond by peripheral adaptations. We need more pervasive structural changes to accomodate the new missions. To understand this, let us examine the new demands in more detail.

(1) Technology and Knowledge Diffusion:

There is no doubt that the vitality of our economy and our worldwide competitive position depend to a considerable extent on continuing advances in scientific knowledge and progress in technological applications. But this, by itself, is far from enough. New knowledge and new technology must be absorbed into the fabric of our economy and become part both of manufacturing and service industry before they can have an appreciable impact. High technology in and of itself produces only a set of new tools, and if these tools are not put to use they are of little value (Carnevale, 1983). But when the new ideas and the new devices are absorbed into the workplace, when they begin to transform the assembly line and the office, when "low technology" activities become "high technology": then one begins to note substantial impact (cf.,e.g., Botkin et al., 1984).

This means that our society increasingly requires, not only knowledge and technology creation, but also knowledge and technology diffusion. There is a major and growing need for the effective dissemination of innovation and information and for technical assistance to potential users in order to facilitate the necessary adaptation of policies, procedures and behavior. The analogy to the spectacular impact of land grant institutions on the development of modern agriculture is striking: It was only the addition of extension to the task of pure and applied research which ensured that new discoveries and new inventions were rapidly and effectively adopted and absorbed by the American farmer and by agricultural enterprises.

The need for a modern equivalent to "extension" in all areas of knowledge is becoming ever more acute. Few individuals have stated the reasons more clearly than Michael O'Keefe in a summary of an international meeting held in 1981 of "Policies for Higher Education in the 1980's":

> "In the coming decade, the assimilation and synthesis of more and more complex bodies of knowledge will be a more important service (of higher education) to society than ever before. And, along with the synthesis, will be the urgent need to transmit it much more effectively, not only to future generations of young people, but also to the broader society. Inundated as we will continue to be by information, our most crucial needs will be to learn to sort, assimilate, and use it effectively." (O'Keefe, 1983, p. 68)

"Assimilation", "synthesis", "transmission to the broader society": these are activities which at this time are not consistent either with the structure nor with the value system of the core of the university. Assimilation and synthesis by their very nature cut across disciplinary boundaries, and both, together with broad dissemination, are quite different from doing basic research and communicating its results only to academic peers through scholarly journals. Clark (1962) divided faculty into four categories. There are teachers and scholar-researchers, both of which are committed to pure research but differ in their identification with their institution. By contrast, demonstrators and consultants stress applied research (and presumably all aspects of diffusion), again with different institutional identification. In terms of these classifications, one can describe current societal needs as placing an unprecedented premium on the latter two groups, particularly that of the demonstrators. Both the organization and the reward system of the university must place greater emphasis on their activities.

(2) Professional Preparation:

A closer look at the real needs for a well educated work force shows significant problems existing, as well, with the current approach to professional education. A swelling chorus of criticism indicates that the curricula of our professional schools in many areas are too narrowly technical and vocational, and at the same time also too theoretical and abstract. The rapid expansion of in-house corporate education reflects, to a considerable extent, the dissatisfaction of employers with our universities (Lusterman, 1977; Lynton, 1983a, 1984). Similar criticism of medical education has triggered a major reexamination of medical schools (AAMC, 1983). All indications point to a critical need for several interrelated adaptations in all professions:

---more emphasis on pulling together the component disciplinary components of the professional curriculum into a coherent whole directly related to the problems faced in the practice of the profession;

---more relation of theory to this practice, of classroom to work place; more use of practitioners, more flexibility in interspersing experiential periods with analysis, and more effective adaptation of the curriculum to reflect prior experience by students;

---more breadth in the professional curriculum, with particular emphasis on obtaining a better understanding of the social, economic, political and historical context of the professional activity,and on achieving greater effectiveness in interpersonal relationships.

These goals cannot be pursued merely by fiddling with the curriculum and adding a few courses here and there. Universities must make a determined attempt to achieve greater internal coherence and interconnectedness of the curriculum and, at the same time, to relate it more effectively with the outside world. One of the principal consequences of the current predominance of the disciplinary structure has been that the synthesis of ideas and skills has been left almost entirely to the student. (Bess, 1982, p. 81) This is increasingly criticized as a major failure of the modern university in view of the growing complexity and the multiple interrelationships of issues in modern society.

(3) Occupational Maintenance:

In addition to the need for a thorough rethinking of the preparation for a career, universities must also move rapidly to recognizing professional education as a lifelong, recurrent process. Modern society is characterized by accelerating change, and there is a growing need for repeated intervals of formal education just in order to keep up with the changes in job content and to maintain competence. The investment of the employer as well as of the individual in human capital must be safeguarded by regular maintenance just as is necessary for the care of physical capital. Such occupational maintenance occurs, of course, mostly through short and intensive periods of instruction. This creates an even greater need for the kind of synthesis and coherence suggested in the previous section. In addition, it will require a further fuzzing of the distinction between campus and workplace and closer relationship between theory and practice (Bruce et al., 1982; Lynton, 1983b).

THE CONTINUING MISSIONS:

The new missions are of great importance to post-industrial society. It will develop alternative mechanisms - indeed has already begun to do so - if universities do not redirect a substantial part of their energies and resources to meeting these growing societal needs. This cannot be accomplished without some adaptation of the current university structure.

Yet the traditional missions continue to be of great importance. The universities must maintain their commitment to basic and undirected research. There is no better societal mechanism for the generation of new knowledge and for deepening our understanding of the world around us. And for these traditional purposes, the disciplinary organization as well as the existing system of academic values and rewards continue to be the most effective. In his new book "The Higher Education System", Burton Clark (1983) describes universities as "the social structure for the control of advanced knowledge and technique" and states that "(m)odern advanced knowledge ... has a specialized character, long composed of specialties that become ever more numerous...multiply with increasing rapidity.. become narrower and more internally sequential, requiring specific and longer tracks of training." The last point indicates that a disciplinary organization is also necessary to train future scholars and researchers.

This alone would dictate the continuing persistence of a strong disciplinary component to the university structure. But there is an added reason which it would be foolish to overlook or to underestimate: the extent to which the tradition, the values and the priorities of the faculty are linked to the disciplines. Every description of higher education stresses that the typical faculty member indentifies more strongly with his or her discipline than with the institution. Clark puts it very simply:

> "...give the academic worker the choice of leaving the discipline or the institution and he or she will typically leave the institution." (1983,p. 30)

Equally characteristic of the academic profession is their extreme sense of autonomy: universities are "organized anarchies" (Cohen and March, 1974; Baldridge et al., 1977), and change cannot be imposed from above.

A DILEMMA TO BE RESOLVED:

Thus both the intrinsic value of the disciplines as a way of organizing advanced knowledge, as well as the strong disciplinary attachment of university faculties dictate that any attempt to create an entirely new university structure which eliminates disciplines is doomed to failure. It would endanger the ability of a university to pursue its traditional mission and, as a result of faculty disaffection, probably fail to enhance its ability to meet new objectives. On the other hand, it is becoming increasingly clear that the new missions of the universities, as described above, are seriouly hindered both by the disciplinary structure and by the concomitant value and reward system which strongly favors disciplinary over multidisciplinary faculty activity. How is this dilemma to be resolved?

As stated in the introductory section of this paper, to date the issue has essentially been avoided: the multiversity has attempted to respond to the multiplicity of its missions by adding new units, centers, institutes and other entities which vary in size and organization but which are all peripheral to the institution. They are the suburbs to the City of the Intellect, and they have provided a buffer which made it possible to maintain the nature and the isolation of the core. The mechanism has functioned reasonably well as long as there was a great deal of money around to power it. But that is no longer available. Also, societal disaffection with higher education is mounting as its demands and expectations are rising. What to do?

One can point to the blood spilled by many academic administrators who have attempted structural changes in the past, and argue that it is best to do nothing. Indeed, it would be foolish to attempt to impose on any university a high degree of structure in a vain attempt to bring about organizational rationality. Every expert agrees that academic institutions necessarily have ambiguous goals (cf.,e.g., Cohen and March, 1974) and are loosely coupled structures (cf.,e.g., Weick, 1976, 1983). They can be viewed as a political system in which faculty participation is effectively mobilized in opposition to drastic changes (Baldridge, 1971).

Yet, to do nothing under present circumstances is even more dangerous. The issue of university organization, structure and reward system should become a major agenda item for discussion and exploration. This paper is a call for concerted attention to exploring ways in which one can bring about pervasive structural changes in our universities without abandoning the disciplinary dimension.

A DIRECTION FOR EXPLORATION:

At this time, the basic organization of a university is essentially one-dimensional. The principal flow of resources, and the channel for personal evaluation and rewards both follow the single line which links the disciplinary department through the college or its equivalent to the campus administration. Yet, as has been described in this paper, a substantial amount of the work of the faculty should increasingly be organized across disciplinary lines. This strongly suggests the development of cross-cutting flow of resources and a second channel for personnel action to support those non-disciplinary activities. Clark (1983, p. 31) considers higher education as having a "matrix structure" which provides two orthogonal bases of faculty grouping: the disciplinary dimension, on the one hand, and the institutional one, on the other. He quotes Ashby as calling this "a way organizationally to have your cake and eat it too." But actually this kind of matrix leaves the internal structure of the university essentially disciplinary and one-dimensional. It does not meet current needs.

Universities should give serious consideration to establishing a two-dimensional structure within the institution. Bess (1972) has described an elaborate internal matrix organization, for which he provides an extensive theoretical justification. The present paper takes a more pragmatic approach and recommends a simpler cross-cutting structure with a dual flow of resources and two parallel channels for personnel actions, both merging in the office of the senior academic officer.

Resources available for the basic operation of the university, which for public institutions would be essentially the state appropriation for instruction and research, would be divided into two unequal portions. The larger one would be allocated, in the usual way, to college deans and from them in turn to the disciplinary departments for the traditional, disciplinary activities. The "second stream" of resources would be available to fund the cross-cutting activities and outreach. The amounts received by the several colleges and departments from the disciplinary stream would not be quite enough for their traditional functions. This would make it necessary for each dean and most chairmen to seek ways of tapping into the "second stream" by involving faculty members in their unit in various cross-cutting and outreach activities. Of course the proportion of this would vary from individual to individual, from department to department, and probably from college to college. The resources for the non-disciplinary and outreach activities would come from a combination of a portion of the basic institutional budget together with all the fees for service and contracted sums collected from the users and clients of the non-disciplinary programs.

A limited version of such a dual stream of resources in effect already exists on most campuses: many of the satellite centers and institutes of the more sprawling multiversities are funded directly out of some central office. But this is done on an ad hoc and very limited basis. The proposal of this paper is to enhance and intensify these "second stream" resource allocations and to include in them two important components: much of the outreach and extension activities, which currently are usually quite

separate, as well as an instructional element designed to br ng about more cross-disciplinary coherence into a variety of professional and other curricula. Setting up this "second stream" in an explicit and visible fashion would sig nal, internally as well as externally, the growing importance of the "second stream" activities and stimulate their steady increase by gradually augmenting the fraction of resources allocated to this stream. However, the important change will come about only if the resource flow is accompanied by a channel for personnel actions.

The addition of such a channel is the major structural change proposed by this paper. It would establish a "second stream" for personnel evaluation and rewards. The centers, institutes, program committees and other units involved in second stream programs would be responsible for evaluating the pertinent work of the participating faculty and for initiating recommendations with regard to salary adjustments, reappointments, promotions and tenure. These recommendations would be forwarded along the "second stream" at the same time as similar evaluations and recommendations regarding the traditional activities of the faculty originating from the disciplinary departments and moving up the "first stream". The two flows would merge at the top, and it would be the responsibility of the chief academic officer with appropriate consultation to reconcile the two.

This "second stream" for the basic system of peer review and faculty reward is essential to give to cross-disciplinary activities the necessary professional legitimation. Evaluation by peers resulting in recommendation for appropriate rewards is one of the most basic characteristics of professional activity. Non-discipline based faculty activity has been severely limited by the absence of an appropriate mechanism for these processes. Thus the "second stream" is necessary as a <u>supplement</u> to the existing channels for evaluation and rewards. This last point must be stressed: the "second stream" is not intended to replace the traditional, discipline-based one. It is not set up in opposition in the way in which many past proposals have suggested a teaching track as an alternative to a research one (cf., eg., Locke et al., 1983). The matrix structure proposed in this paper envisions every faculty member as continuing to have one for firmly based in the discipline and to be evaluated and rewarded <u>in part</u> for disciplinary teaching and scholarly activity. In addition, a faculty member would also be a member of one or more cross-disciplinary functional units and have his or her work evaluated by the peers in that group.

Such a system - the organizational and operational details of which could vary quite widely and would probably differ from university to university depending on local circumstances - would have a great advantage over the present situation. It would give a substantial amount of visibility, leverage and credibility to the many new missions of our universities without diminishing the importance of the traditional objectives which must be continued. But there is also an obvious disadvantage: that of complexity. The experience at SUNY Buffalo (Clark, 1983), the recent emasculation of the collegiate organization at Rutgers, and the diminished status of the colleges at UC Santa Cruz all attest to the difficulty of maintaining a relatively complex organization if the reasons for its existence are not consistent with what Clark describes as the "reemerging and reconsolidated values of the central faculty."

This leads to some scepticism about any proposal for structural change in the university. Yet the current situation and the current needs differ in several important ways from conditions and motivations which triggered the experiments of the sixties. The principal objective of the cross-cutting organizational elements at Buffalo, Rutgers and Santa Cruz was perceived by the faculty as the improvement of undergraduate education. In terms of Gouldner's (1957-1958) classification of faculty interests, this placed essential "local" priorities of the institution into direct confrontation with the "cosmopolitan" values of the faculty. Furthermore, resources were still plentiful, funds for purely disciplinary activities readily available, and the pressures for adaptation few and negligible.

By contrast, most of the new missions which the universities are presently called upon to respond are much more closely related to the "cosmopolitan" professional interests of the faculty. They tend to expand and modify but not to oppose faculty priorities. At issue now are activities such as applied research and technical assistance, professional education, opportunities for interaction with the work place. These matters may not lie at the core of faculty concerns and priorities, but one can hope that they are sufficiently close so as to bring about less faculty opposition to organizational adaptations than what was triggered by earlier attempts at structural reform. In addition, there exists considerable evidence of faculty dissatisfaction with the status quo. (cf., e.g., Bess, 1982; Locke et al., 1983). There is much reason to believe that a substantial proportion of the faculty in our universities would enjoy greater involvement in various cross-disciplinary activities if these received more recognition and if there existed an appropriate peer-based evaluation and reward system.

CHANGE IN ALL UNIVERSITIES?

In one sense, the proposed structural changes are most important in the large group of universities which do not fall into the Research categories of the Carnegie classification scheme (Carnegie Council, 1976). It is in the institutions in which basic research and doctoral study are relatively limited that a redirection of faculty energies and capabilities is most urgent. However, two reasons argue for making the suggested changes in all universities, even in the more prestigious research institutions.

The first reason is that many of the universities in the Carnegie Research categories need to play an important role in fulfilling the new missions. They are the pace setters in professional education and need to take the lead, as well, in occupational maintenance, as indeed some of them are already doing. Furthermore, many of them are deeply involved in knowledge and technology diffusion already and consider it an important part of their mission.

The second reason is that the more prestigious institutions inevitably provide role models and standards of academic respectability for all universities. Differentiation of function among tiers of institutions works well only if there is parity of esteem, but that rarely if ever obtains (Clark, 1983, p. 63). In the absence of such parity there is great internal as well as external pressure on the less esteemed units to emulate the behavior and perceived priorities of the more highly ranked ones.

For both of these reasons, therefore, it is desirable to explore structural changes such as the proposed "second stream" in all universities. The difficulty of change in academic institution is almost proverbal. But the wolf is much closer to the door and has, indeed, begun to poke a snout into the interior: necessity is the progenitor of invention, and one can but hope that necessity indeed will trigger serious consideration of structural change involving both the allocation of resources and the academic reward system. Without this, many universities will have serious difficulties in maintaining their quantitative and their qualitative status.

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